



Q&A Executive Viewpoint

A conversation with

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An innovation leader talks about how DOE develops and deploys new technologies to solve the department's biggest challenges

What are some of the key challenges that DOE's technology innovators are tackling?

The biggest challenge we're tackling is the enterprise scale of the solutions. We are building platforms that will accommodate the entire complex at DOE, which includes all the national labs.

We also have to think very carefully about the rollout and the rollout strategy. We need the experience to be very good for our customers, and for some solutions that are necessities but also innovative, sometimes customers don't really understand the tools and the value proposition they bring to the table. That's why the whole organizational readiness piece must be part of the technology innovators' roadmap.

Currently, we are expanding our scope across federal agencies, and our technology roadmap will include extensibility beyond the DOE complex in the future. It's definitely something that we need to address, and we are improving each day.

Which emerging technologies are you particularly excited about as possible tools for addressing those challenges?

We're excited that cloud service providers are starting to integrate intelligent

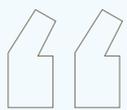
automation capabilities, such as artificial intelligence and machine learning, into their solutions.

I am also the senior agency official for geospatial information, so I'm definitely excited about the geospatial data aspect. At DOE, we have made great strides in geospatial data management strategies and enabling capabilities so that we're able to share and exchange geospatial data assets. We've also done a great job of thinking holistically about geospatial data management.

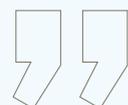
For instance, we're establishing what we call a dynamic data fabric that will rest on top of various geospatial data assets so that we can enable better aggregation and curation of information to support some of the advanced analytics that we're doing and some of the AI and ML capabilities.

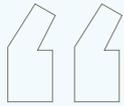
How does DOE's Innovation Community Center support the development and testing of new technologies?

The ICC was established in 2019, and I'm the thought leader for it. The ICC inspires innovation by providing a collaborative capability to discover the mission challenges and the supporting platforms and then to develop, test and conduct quality assurance on the delivery of production solutions.

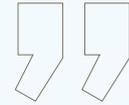


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We partner across the department to discuss the challenges we're experiencing and then come up with ideas to address those challenges. And we don't stop there. With the ICC, we take it all the way through to production solutions. Some people start with rapid prototyping, some start with a proof of concept, but some don't want to do that. They want to get straight to a pilot solution to make sure that it's going to meet their expectations and requirements. So we do a pilot for a subset of users and then take it straight into production.

We're very focused on delivering innovations that matter. The National Energy Technology Lab is a good example of an organization that has taken full advantage of the ICC capability. Without the ICC, they would not have been able to validate their smart search capability and some other things they're doing to help their researchers be more efficient in their jobs.

We are providing end-to-end capabilities for our mission areas and the program offices and making sure that it's not just about technology but it's about process efficiencies as well. We have also made sure that we have test enclaves and quality assurance enclaves integrated into the ICC.

What lessons have you learned from the center, and what is your vision for the future of collaboration on technology solutions?

Some of the program offices didn't know how to use emerging technologies to address their needs. For instance, they understood that AI can solve challenges, but they weren't quite sure how to go about it.

So in fiscal 2021, we stood up an

Innovation Academy that's part of the ICC to provide education and training on emerging processes and capabilities within the department. And one of the ICC's capabilities is to help people understand how to use AI to address specific business problems. Another aspect of the academy is looking at ways to build business model canvases to help get some consistency in how we establish organizational strategies.

The other pain point we had was innovation itself. We want people to understand that it's OK to be a change agent because you're fueling innovation for the good of the mission. The Innovation Academy is very focused on building and strengthening that culture of innovation within DOE.

If you are going to be a technology innovator, your influential skills are so important. You want people to embrace the change, and they don't do that just based on technical solutions. They embrace the change based on the ability to build relationships and the ability to collaborate.

That's why the whole operationalization aspect I mentioned earlier is so important. I can't overemphasize how important that is. We can get a proof of concept done. We can prove out a capability. We can then move into the realm of getting the production pilot going, and a subset of users can absolutely love it. But if we don't take care of the full life cycle and make sure that service desk support is in place, for instance, once the product is rolled out, then that little bit at the end can cause the technology adoption to not go as well as we'd like.

We have to think about it all the way through and build this capability into our technology roadmap.

What advice do you have for agencies that want to improve the way they work with industry and other partners on complex projects?

I would say include industry early in the game – when you're thinking about the ideas. Consider having more industry days where company representatives provide insights on how to solve a problem without so much emphasis on the products they sell. At DOE, we have industry experts come in and share some of their ideas, but we are going to do an even better job of that in fiscal 2022.

In addition, my advice for other agencies is to include your privacy teams early in the game and make sure cybersecurity is considered throughout the thought process.

I believe there's an opportunity to get academia involved as well. The students and professors have really good ideas and probably can help us do things a bit more efficiently. Being more inclusive is a great way to expand and scale solutions outside of and across the federal government.

There's one other thing that I would like to point out. All these efforts require strong teamwork. None of this would be successful and I would not be successful in my career and at DOE without our strong team. I have to give a shout-out to my team and my peers because it wouldn't happen without them.

We have some exciting things happening at DOE around data science in particular. We're going to need those capabilities to support new Energy Secretary Jennifer Granholm's initiatives for climate change issues and her agenda around equal justice. Data science is how we're going to get it done. I'm very excited. I feel like I'm in the right spot. ■

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